

We claim:

1. A method of operating a communications network having a plurality of interconnected nodes, the method comprising:
  - establishing a connection path from an ingress node to an egress node through a plurality of intermediate nodes;
  - associating said connection path with a network-wide unique identification;
  - on said ingress node, storing said path identification so as to indicate that said path originates at said ingress node;
  - on each said intermediate node, storing said path identification so as to indicate that said path transits said intermediate node; and
  - on said egress node, storing said path identification so as to indicate that said path terminates at said ingress node.
2. The method according to claim 1, wherein the step of establishing a connection path includes signalling a connection set-up request from said ingress node through said intermediate nodes to said egress node.
3. The method according to claim 2, wherein the step of establishing a connection path further includes signalling an acknowledgement from said egress node through said intermediate nodes to said ingress node in response to said connection set-up request.
4. A method of transmitting packets received from a connectionless network wherein each packet includes a destination network address, the method including:
  - providing a forwarding table wherein each network address is associated with a single interface index which dictates an output port and a connection over which corresponding packets should transported;
  - forwarding a connectionless packet to an output port based on an interface index obtained from the forwarding table and transmitting the connectionless packet over the corresponding connection;

maintaining a routing table for routing connectionless packets over a connection-oriented network, said routing table associating each network address with one or more interface indexes;

associating each interface index with an application, one application being connectionless routing and one application being label switching; and

downloading interface indexes from said routing table to corresponding entries in said forwarding table such that the label switching application has a higher priority than the connectionless routing application.

5. A method of transmitting packets, including:

receiving (a) connection-oriented packets having a label associated therewith, said label being a connection identifier, and (b) connectionless packets carrying a network address and having no label associated therewith;

providing a forwarding table wherein each network address is associated with a single interface index which dictates an output port and a connection over which corresponding connectionless packets should transported;

providing a switching table for switching ingress labels into egress labels;

forwarding a connectionless packet to an output port based on an interface index obtained from the forwarding table;

forwarding a connection-oriented packet to an output port based on said switching table;

transmitting connection-oriented and connectionless packets over the corresponding connections;

maintaining a routing table for routing connectionless packets over a connection-oriented network, said routing table associating each network address with one or more interface indexes;

associating each interface index with an application, one application being connectionless routing and one application being label switching; and

downloading interface indexes from said routing table to corresponding entries in said forwarding table such that the label switching application has a higher priority than the connectionless routing application.

6. A network node, comprising:

a plurality of input and output ports operative to receive and transmit packets carrying a connection identifier for transport over a connection-oriented network;

switching logic for switching said connection-oriented packets from one of said input ports to one of said output ports based on one of said connection identifiers;

segmentation and re-assembly logic for enabling said ports to assemble connectionless packets from the payloads of one or more connection-oriented packets on ingress and to segment each such connectionless packet into one or more connection-oriented packets on egress, each said message packet carrying a network address for transport over a connectionless network;

forwarding logic for forwarding connectionless packets from one of said input ports to one of said output ports, said forwarding logic including a forwarding table which associates a network address or a group of network addresses with a single interface index, said interface index indicating the identity of one of said output ports and enabling a connection identifier to be specified for segmentation of the connectionless packet at the indicated output port;

routing logic for forwarding a connectionless packet to a next-hop based on the network address carried by the packet, said logic including a routing table which associates a network address or group thereof with at least one interface index, said logic being enabled to download an interface index for a given network address or group thereof from said routing table to the same network address entry in said forwarding table time, and

logic for setting up a label switched path wherein a connectionless packet is associated with a connection identifier which functions as a label so that transit nodes in the label switched path can switch the connection-oriented packets constituting connectionless packets based on the connection identifier without re-assembling the

connectionless packets, said logic associating the label switched path with an interface index;

wherein said interface indexes are associated with a priority hierarchy in which interface indexes associated with label switched paths have a higher priority than interface indexes associated with connectionless routing, and wherein said routing logic does not overwrite a forwarding table entry having an interface index associated with a label switched path with an interface index associated with connectionless routing.

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